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Ref. 20190409T-1 CCBA Pretoria Boiler 2 Control System Upgrade

To: Mr Markswell Chiwamba
Plant Engineer
CCBA Pretoria

Steam House BTS – Boiler Management & Control System

Dear Mr Chiwamba,

Thank you for the opportunity to quote you on your control system requirements. We hereby submit a proposal for the supply, installation and commissioning of a boiler management and control system for your boiler. BTS has recently completed a successful upgrade to the control system on your coal fired boiler and we would recommend that you upgrade the second boiler. Standardising on your control systems is beneficial for backup support, control of spares, training of operators and most importantly achieving the maximum efficiency possible from your boiler plant.

The advantageous of a Steam House BTS boiler control system are as follows -

- 1.1.1 Industry leading support
- 1.1.2 Designed with the operator in mind ensuring simple training and operating principles
- 1.1.3 Refined control philosophy based on years of experience to ensure maximum achievable combustion efficiency
- 1.1.4 Reduced CO₂ emissions through improved efficiency
- 1.1.5 Industry leading boiler response times and turndown ratio
- 1.1.6 Caters for specific customer requirements in terms of PLC hardware and software as well as custom programming and site integration

Best Regards
Tinus van den Berg
Burner Technical Solutions

Directors G Fourie, M du Toit, S de Villiers



SANS ISO 3834

Strictly Confidential

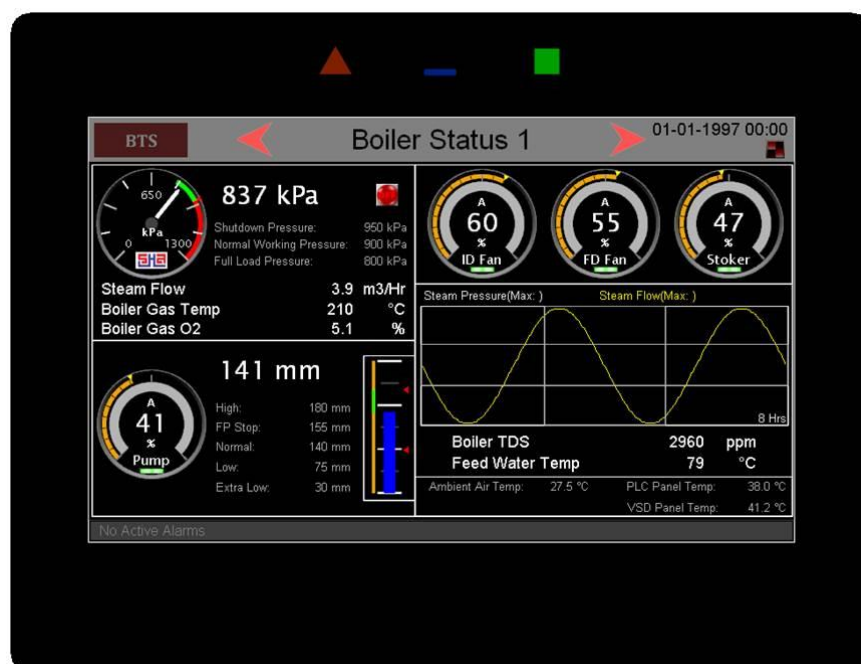
2 Boiler Details

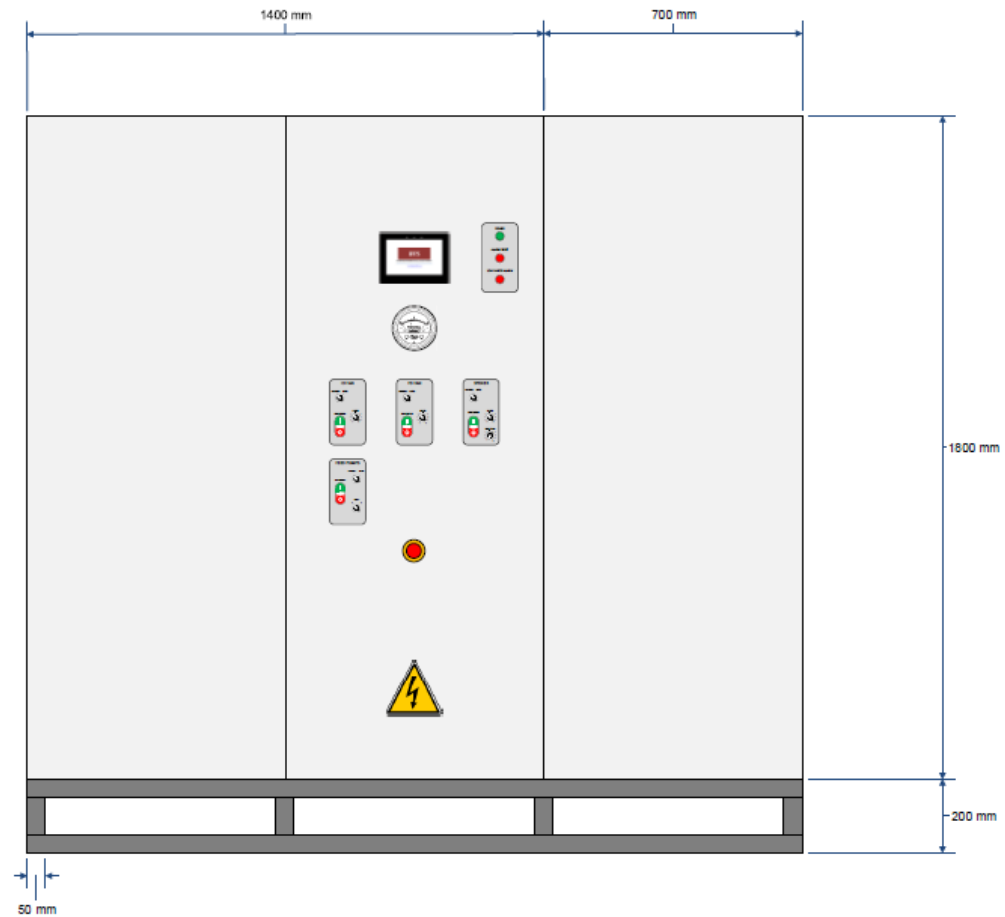
Boiler Type	3 pass horizontal fire-tube, fully wetback
Fuel	Coal Peas 5 – 25mm
Manufacturer	Actom John Thompson
Design Pressure	1,034 kPa
Design Code	BS EN 2790
Nominal Rating	10,000 kg/hr (from and at 100°C)

3 Scope of Supply

3.1 Steam House-BTS boiler management and control system

Steam House together with our subsidiary company BTS who specialises in custom automation and combustion control equipment have combined more than 50 years of experience on boiler controls to produce the most simple, streamlined and efficient boiler control system available on the market. The system has been designed from the ground up to take cognisance of the level of skillset from the operators to give a simple interface for the operator, yet a sophisticated state of the art back end for efficient operation.





Each control system comes standard with the following features –

- 3.1.1 Simple button and knob control interface for the operator
- 3.1.2 Siemens PLC based control
- 3.1.3 HMI - touch screen interface for the engineer
- 3.1.4 Variable speed stoker drive and control
- 3.1.5 Variable speed FD fan drive and control
- 3.1.6 Variable speed ID fan drive and control
- 3.1.7 Modulating water level control
- 3.1.8 High steam pressure alarm and cut-out
- 3.1.9 High flue gas temperature alarm and cut-out
- 3.1.10 Feed water flow monitoring
- 3.1.11 Feed water temperature monitoring
- 3.1.12 Low water level alarm
- 3.1.13 Extra-low water level lock-out hard wired into controls
- 3.1.14 Low water level probe with high integrity self-checking controller
- 3.1.15 Data Logging to local memory card
- 3.1.16 UPS - 2 kVA UPS back-up power supply

3.2 Standard Instrumentation

Each boiler is provided with the following instrumentation -

- 3.2.1 One high pressure cut-out switch
- 3.2.2 One capacitance water level probe
- 3.2.3 One high integrity self-checking extra low-level alarm probe and controller
- 3.2.4 One furnace draught photo-helic gauge for each fire tube (flue)
- 3.2.5 One hot water flow meter complete with pulsing unit
- 3.2.6 One boiler pressure transmitter
- 3.2.7 One feed water pressure transmitter
- 3.2.8 One boiler flue gas temperature transmitter

3.3 Documentation Supplied with Boiler

- 3.3.1 Set of control system schematics
- 3.3.2 Wiring diagram for panels manufactured by Steam House BTS
- 3.3.3 Control System Instruction Manual

3.4 Delivery to site, Installation and commissioning

- 3.4.1 Termination of electrical cables from VSD panel to motors where required
- 3.4.2 Supply & installation of instrumentation cables from control panel to instruments where required
- 3.4.3 Supply & installation of cable trays and brackets for additional instrumentation not present on boiler
- 3.4.4 Mounting and installation of control panel
- 3.4.5 Commissioning of control panel
- 3.4.6 Commissioning of VSD's

4 Optional Extras on Control System

- 4.1.1 Panel Air Conditioning Unit
- 4.1.2 Automatic TDS control system
- 4.1.3 Online O₂ monitoring - for live feedback on combustion efficiency
- 4.1.4 Remote technical support - addition of GSM modem to allow remote software debugging and fault finding

5 Quality, Health and Safety

The following key aspects form part of this proposal

- 5.1.1 Occupational Health and Safety Act
- 5.1.2 Designed to meet the boiler design code for each boiler it is fitted to and fully compliant to the relevant health and safety standards

6 Pricing

The following is the pricing related to the various options proposed

Option Description	Price (Ex VAT)
SHA-BTS Boiler Control System	R 394,040
Supply and build new sheet metal control panel	R 89,480
<i>Supply new 2100x2000x400 Sheet Metal Panel</i>	
<i>Use existing ID/FD/Stoker VDS's, standard VSD clean and FAN service included.</i>	
<i>New circuit breakers, bus bars, cabling, trunking etc</i>	
Electrical Installation and Commissioning	R 138,225
<i>Removal of old equipment</i>	
<i>Installation of new cable trays where required</i>	
<i>Installation and Termination of new equipment</i>	
<i>Commissioning and sign off boiler control system</i>	
OPTIONAL	
Panel Air Conditioning Unit and circulation fan	R 29,980
Supply and install automatic TDS control station and controller	R 54,950
Supply and Install ETC2800 Oxygen Monitoring Probe	R 79,790
Spare set of Siemens PLC Modules	R 95,200

7 Exclusions

- 7.1.1 Anything not specifically mentioned in the proposal, not limited to, but including
 - 7.1.1.1 Mechanical repairs to boiler components such as valves, sight glass etc.
 - 7.1.1.2 Repairs of existing equipment, such as automatic TDS control
 - 7.1.1.3 Damaged motors, fans or gearboxes
 - 7.1.1.4 Repairs of VSD components other than replacing the cooling fans.

8 Terms and Conditions

8.1 Commercial

- 8.1.1 This quote is valid for 30 days
- 8.1.2 All prices quoted exclude VAT of 15%
- 8.1.3 Work and ordering of parts will only commence upon receiving a valid PO

8.2 Payment Terms & Validity

- 8.2.1 50% on order
- 8.2.2 35% on delivery of equipment to site
- 8.2.3 15% on commissioning and hand-over

8.3 Lead Time

- 8.3.1 Lead time from receipt of deposit to delivery of equipment to site – 8 weeks
- 8.3.2 Installation time required on boiler – 10 working days

8.4 Warranty

- 8.4.1 All equipment will be supplied with a 12-month warranty from date of commissioning

8.5 Client to provide

- 8.5.1 Induction for our staff and sub-contractors to enable compliance with site rules and requirements
- 8.5.2 Free issue supply of water, electricity and fuel to undertake any of its services on site
- 8.5.3 Unobstructed / free site access for delivery of services.
- 8.5.4 Ablution facilities for site staff